

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1-32. (Cancelled).

33. (Currently Amended) A method of treating arthritis, muscular dystrophy, multiple sclerosis, arteriosclerosis, autoimmune disease, ischemia-reperfusion injury, neurodegenerative disease, myocardial infarction, or stroke inhibiting apoptosis in a subject in need of such a treatment, said method comprising: inhibiting apoptosis in the subject by administering a therapeutically effective amount of α_1 -antitrypsin, an oxidation-resistant α_1 -antitrypsin Met³⁵⁸ variant or a free radical-resistant α_1 -antitrypsin M³⁵⁸ variants variant, in which the effective amount inhibits apoptosis, and monitoring a decrease in apoptosis, wherein the subject suffers from at least one of arthritis, muscular dystrophy, multiple sclerosis, arteriosclerosis, autoimmune disease, ischemia-reperfusion injury, neurodegenerative disease, myocardial infarction, or stroke.

34. (Previously Presented) The method of Claim 33, wherein the effective amount is at least 0.001 and no greater than 70 g/kg body weight.

35. (Previously Presented) The method of Claim 33, further comprising administering at least one free radical scavenger or inhibitor.

36. (Previously Presented) The method of Claim 33, in which the subject is a human.

37. (Previously Presented) The method of Claim 33, in which the therapeutically effective amount is sufficient to provide at least 10 pM and no greater than 2 mM of the inhibitor in the biological fluid of the subject.

38. (Previously Presented) The method of Claim 37, in which the biological fluid is blood.

39. (Previously Presented) The method of Claim 37, in which the therapeutically effective amount is sufficient to provide at least 0.5 μ M and no greater than 2000 μ M in the biological fluid of the subject.

40. (Previously Presented) The method of Claim 33, in which the administering is parenterally, orally, vaginally, rectally, nasally, buccally, intravenously, intramuscularly, subcutaneously, intrathecally, epidurally, transdermally, intracerebroventricularly, by osmotic pump, by inhalation, or combinations thereof.

41. (Previously Presented) The method of Claim 33, in which the therapeutically effective amount is administered at least once daily and no more than once hourly.

42. (Previously Presented) The method of Claim 33, wherein the neurodegenerative disease is Alzheimer's disease or Downs Syndrome.

43. (Currently Amended) A method for treating a ~~disease in a subject by inhibiting apoptosis, wherein the disease comprises~~ arthritis, muscular dystrophy, multiple sclerosis, arteriosclerosis, autoimmune disease, ischemia-reperfusion injury, neurodegenerative disease, myocardial infarction, or stroke in a subject in need of such a treatment, said method comprising administering to the subject a therapeutically effective amount of α_1 -antitrypsin, an oxidation-resistant α_1 -antitrypsin Met³⁵⁸ variant or a free radical-resistant α_1 -antitrypsin M³⁵⁸ variants variant to inhibit apoptosis thereby ameliorating the disease in the subject.